

REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks.

Claim 1 has been amended to clarify that the carbon-carbon double bond and the triple bond recited in the claims are different from the double bonds in an aromatic ring as supported by the specification at page 11, lines 27-31. Also, it is generally known that the double bond in an aromatic ring is much more stable than a carbon-carbon double bond and triple bond in aliphatic compounds and cannot be hydrogenated easily. Claims 11 and 15 have been amended editorially to clarify the claims. Claim 15 further has been amended to include the deuterated solvent corresponding to that in claims 1 and 11.

Claims 1-3, 5-9, 11, and 13-17 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Garnett et al. ("Catalytic deuterium exchange reactions with aromatics VI. Studies in platinum catalyst reproducibility and activation procedures", J. Catalysis 2(4), 339-347 (1963)) in view of Kato et al. (U.S. Patent No. 5,221,768). Applicants respectfully traverse this rejection.

Claim 1 is directed to a method for deuteration of a compound formula [1], and the claim recites that the step of reacting the compound formula [1] under neutral condition with a deuterated solvent other than D₂O₂ in the co-presence of one of an activated palladium catalyst, activated platinum catalyst, activated rhodium catalyst, activated ruthenium catalyst, activated nickel catalyst, and activated cobalt catalyst. Claim 1 further recites that the compound formula [1] may include a carbon-carbon double bond(s) and/or triple bond(s), which is in an aliphatic portion of the compound and that when the compound represented by the formula [1] has a carbon-carbon double bond(s) and/or triple bond(s), the catalyst is activated in advance.

Garnett discloses a method for deuteration of benzene with heavy water (see page 340, right coln. last para., lines 1-6, Fig. 2 on page 343, and Table 3 on page 347). Benzene is different from the compounds represented by the formula [1] recited in claim 1. Even if one of R¹ or R² of the compound formula [1] can be benzene, the compound

formula [1] further includes the X group, which is a carbonyl group or a hydroxymethylene group, and the group of either the R¹ or R² that is not the benzene. In addition, the double and triple bonds in an aliphatic group of the compound as those that may be included in the compound formula [1] of claim 1 are more reactive and more likely to be reduced with H₂ or D₂ than double bonds included in benzene, which are covenant bonds and are stable. Garnett in fact discloses substitution of hydrogen atoms in benzene with deuterium atoms (see table 3 on page 347) but is silent about the reduction results of the double bonds in benzene. Thus, the subject matter of claim 1 is different from that of Garnett, and there is no reasonable basis to combine Garnett's method with the other references cited in the Office Action.

Kato discloses a method of preparing deuterated methyl acrylate or methacrylate by substituting hydrogen with deuterium in these compounds directly (see abstract). Kato further discloses a deuterium source such as heavy water and a combination of heavy water and deuterium gas (see coln. 2, lines 5-9). Kato fails to disclose that an activated catalyst is used in the deuteration method. When the heavy water is used as the deuterium source, the catalyst present in the reaction system of Kato would not be activated, and the high deuteration ratio that the method of claim 1 can provide could not be obtained. The deuteration ratios of 15-62 % disclosed in Kato obtained by using heavy water as the deuterium source are generally lower than those obtained by the method of claim 1 (see examples 1-6 and table 1 in cols. 3-4 of Kato and table 3 on page 31 of the specification). When D₂ gas is used with D₂O in Kato, the double bond of the methyl acrylate and methacrylate would be reduced. Accordingly, Claim 1, and claims 2-3, 5-9, 13-14, and 16-17 that ultimately depend from claim 1, are distinguished from Garnett in view of Kato.

Claims 11 and 15 recite the deuteration methods similar to that of claim 1 and further recites that the compound is tricyclo[5.2.1.0^{2,6}]decan-8-ol and that the activated catalyst is a palladium carbon or platinum carbon, respectively. Accordingly, at least for the same reasons as discussed for claim 1, claims 11 and 15 are distinguished from Garnett in view of Kato.

In addition, tricyclo[5.2.1.0^{2,6}]decan-8-ol includes no benzene ring and does not include the carbon-carbon double bond or triple bond in an aliphatic portion found in the

compounds of Kato (see page 30 of the specification). Thus, the compound at issue in claims 11 and 15 is unrelated to the compounds disclosed in Garnett and Kato. Accordingly, this rejection should be withdrawn.

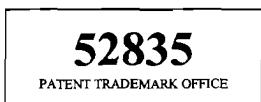
Claims 12 has been rejected under 35 U.S.C. 102(b) as being anticipated by Cristol et al. (Abstract of “Bridged polycyclic compounds. XX. Cis stereochemistry of the addition of methanol and water to endo-trimethylenenorbornene”, Tetrahedron Letters (1963) 185-189). Applicants respectfully traverse this rejection.

Claim 12 recites Tricyclo[5.2.1.0^{2,6}]decan-8-ol having deuteration ratio of 60% or more.

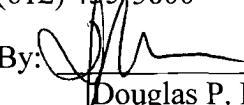
Cristol discloses isomeric compounds I and II and compounds that would be obtained from the compounds I and II (see first page). The chemical structures of each of the compounds I-XIII are not disclosed in Cristo. Even if the compound X, which could have the – OD group as the R group in the compound VIII, had a structure shown at the end of the reference, the reference discloses that the compound X is present in an amount of less than 10 % in the compound XII (R = – OH group) (see last line on first page). The deuteration ratio of less than 10 % is significantly lower than the ratio of 60% or more recited in claim 12. Accordingly, Cristol fails to disclose tricyclo[5.2.1.0^{2,6}]decan-8-ol having deuteration ratio of 60% or more as claim 12 recites, and this rejection should be withdrawn.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,



HAMRE, SCHUMANN, MUELLER &
LARSON, P.C.
P.O. Box 2902
Minneapolis, MN 55402-0902
(612) 455-3800

By: 
Douglas P. Mueller
Reg. No. 30,300

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DPM/my/jes